REMARKS/ARGUMENTS

Reconsideration of this application in view of the above amendments and the remarks below is respectfully requested. By this amendment, Claims 1, 18 and 21 have been amended. No claims have been added or cancelled. Hence, Claims 1-10 and 15-21 are pending in the application.

THE REJECTIONS BASED ON THE PRIOR ART

Claims 1-5 and 8-10 are rejected under 35 U.S.C. 102(b) as allegedly anticipated by Burroughs et al, U.S. Patent No. 6,076,090 (hereinafter *Burroughs*). Applicant submits that Claims 1-5 and 8-10, as amended, are patentable over *Burroughs*. Each of the pending claims is discussed herein.

Claim 1

Independent method claim 1 recites:

> receiving a request to execute a query;
> determining that a collection of data elements to be returned by the query corresponds to a first data structure containing data fields, wherein **the data fields are not specified by a data type definition within a type dictionary of the database system**;
> obtaining attribute values that respectively describe the data fields within the first data structure;
> recording, within the type dictionary, a first data type definition that specifies the data fields described by the attribute values; and
> **removing the first data type definition from the type dictionary when any of the following events occurs**: a) execution of the query is complete, b) a compilation of the query is deleted from system memory, or c) a process identifies a flag, in the first data type definition, that the first data type definition is a query duration type. (emphasis added).

The method of Claim 1 provides an advantageous way for a database system to dynamically obtain and record data type information (or attribute values) that specifies data fields in data elements to be returned by a query, even if the data fields are not specified by a data type definition within the database system prior to receiving a request for the query. According to Claim 1, data elements to be returned by a requested query may be determined. The determined data elements may correspond to a data structure that contains data fields not specified by a data type definition within a type dictionary of the database system. Hence, attribute values that respectively describe the data fields (not specified in the type dictionary) may be obtained. Accordingly, a data type definition by which the data fields are specified may then be recorded within the type dictionary of the database system.

Thus, under one embodiment of the present invention, if the data elements to be returned by the requested query are, for example, of an opaque data type such as a binary large object (blob) that contains data fields not specified by any data type definition within a type dictionary of a database system, a data type definition that specifies the data fields in the opaque data type may still be recorded in the type dictionary. As a result, the query result to be returned to a requestor may contain a better description about the data fields contained in the opaque object.

Such a method is neither disclosed nor suggested by *Burroughs*. Instead, *Burroughs* discloses a method of translating Java language types into database types and then storing the translated Java language types in corresponding columns of a relational table to persist an object (col. 3 lines 62-64).

As disclosed by *Burroughs*, fields within the object are examined using Java Reflection methods in a storing (which is referred to as "persisting" by the reference) transaction (col. 3 lines 57-61). The primitive language fields (such as integer, character, long, float, string, etc.) found in the object are stored in columns of corresponding types in a relational table (FIG. 8 and its accompanying text). Similarly, a complex field in the object, such as Hashtable and Vector types in Java, may be stored in a column of binary format in the form of a (bit) stream (col. 4 lines 20-23). A schema map object is used to store the primitive language fields and bytes for Java Hashtable or Vector using ODBC calls.

According to *Burroughs*, neither retrieval (which is referred to as "restoring" by the reference) nor deletion involves obtaining attribute values for the fields of the Java object using the Java Reflection methods. For example, to retrieve, only an object identifier is needed to retrieve row data stored in the relational database tables.

Thus, *Burroughs* only discloses that in a storing transaction a Java class object may be dynamically examined by Java Reflection methods to obtain Java primitive types and that primitive type or Hashtable/Vector data fields in the Java class object may be stored in the relational database tables by ODBC calls using data types that are intrinsically supported by the relational database. **There is no disclosure in *Burroughs* about (dynamically) recording a previously non-existent data type definition in the type dictionary of the database at the time of retrieval.**

Type Dictionary

The method disclosed by *Burroughs* as discussed above is quite different from that claimed in Claim 1. For example, Claim 1 features a type dictionary that stores data type definitions. More specifically, the type dictionary featured in Claim 1 does not initially have a data type definition that specifies data fields of a data structure, but is then recorded with a data type definition relating to the same data fields.

Burroughs, on the other hand, fails to contain any disclosure about a type dictionary of a database system, let alone a type dictionary that dynamically accepts data type definitions, previously non-existent, for data fields of data structures, as featured in Claim 1.

Page 3 of the Office Action ("determining that a collection ...") apparently correlates data fields in a Java class object of *Burrough* to the data fields of Claim 1, and correlates a (relational) table of *Burrough* to the data type definition of Claim 1. However, this analogy fails, because there is no disclosure in *Burroughs* that such a relational table is in the type dictionary of the database system, as required by Claim 1.

Page 6 of the Office Action further argues that "wherein class objects contain information such as names, data types and classes of the fields, it is noted that said disclosure would, to one of ordinary skill, read upon the claimed invention's features of a type dictionary containing data type definition that specifies data fields of a data structure."

The Office Action in effect argues two conflicting positions simultaneously. First, according to the Office Action (at page 3), Java class fields of *Burroughs* are analogous to data fields of Claim 1, which are not specified by a data type definition in a type definition in the database dictionary as featured in Claim 1. Second, without providing any support from the reference, the Office Action (at page 7) asserts that *Burroughs* would, to one of ordinary skill, contain a type dictionary that stores a data type definition that specifies the Java class fields. However, as clearly disclosed by *Burroughs*, Java class fields are read out by Java Reflection methods into primitive type or byte stream of Java language and henceforth stored in the database by ODBC calls (in which primitive types and byte streams are directly passed without any mapping that *Burroughs* has allegedly disclosed). There is no disclosure in *Burroughs* that at the time of a query, these Java class fields are recorded in a type definition of the type dictionary of the database.

Burroughs at most discloses that Java class fields may be stored into native data types supported by a relational database through ODBC calls. Since the fields in the Java class object have been converted into the database data types through ODBC calls, there is simply no need, nor is it disclosed, in *Burroughs* for a type dictionary of the database system that contains a type definition for the Java class fields. The Java class fields are only acted upon by Java Reflection methods. The Java Reflection methods (or the schema map object), in turn, only determines what fields the Java class object contains, but is not responsible for mapping the Java class object fields to anything other than Java language primitive types or byte streams. The support for Java language primitive types or byte streams and for their corresponding relational database types are intrinsically supported by ODBC calls, without a need for ODBC or otherwise to record any previously non-existent data definition in the type dictionary of the database.

Data Types Recorded In Response to Retrieving Data Elements of Unknown Types

The columns of the relational table in *Burroughs*, which are analogous to data elements of Claim 1 according to one analogy of the Office Action, use only pre-existing data types. Page 7 of the Office Action, however, contends that *Burroughs* discloses a system where "a schema map object (i.e., the type dictionary) is generated in response to a first transaction (i.e., the initial query) and **stored in a table corresponding to said object which does not yet existed in a database**" (emphasis added).

Applicant concedes that *Burroughs* discloses a schema map object. However, the schema map object (126, 128 or 130) as disclosed in *Burroughs* exists in "main memory" on the other side of ODBC than the side where the database (or data store 98 of FIG. 5A) is located, as clearly shown in FIG. 5 and FIG. 5B (both drawings are joined by a reference symbol A). Thus, in *Burroughs*, the schema map object is a programmatic object that is an ODBC client of the database, not a type dictionary of the database.

Furthermore, contrary to the assertion made by the Office Action, the schema map object, as program logic clearly illustrated in FIG. 6, is not stored in a table corresponding to the Java class object which does not yet existed in a database. There is simply no disclosure in

Burroughs about storing the schema map object with the logic as illustrated in FIG. 6 in the database.

Removing the First Data Type Definition

Claim 1 further recites "**removing the first data type definition from the type dictionary when any of the following events occurs**: a) execution of the query is complete, b) a compilation of the query is deleted from system memory, or c) a process identifies a flag, in the first data type definition, that the first data type definition is a query duration type" (emphasis added). On the other hand, the schema map object, according to *Burroughs*, is preferably generated in response to the first transaction in which an object of a certain class is to be persisted and **remains in memory** for persisting, querying, restoring or deleting objects of that class (col. 3. lines 40-44). *Burroughs* clearly fails to disclose that the schema map object is removed when one of the events featured in Claim 1 occurs.

For the reasons given above, Applicant submits that Claim 1, as amended, is patentable over *Burroughs*.

Claims 18 and 21

Claims 18 and 21 are database system and computer-readable medium claims, which are analogous to the method Claim 1. Applicant submits that Claims 18 and 21 are patentable over *Burroughs* for at least the same reasons as those given above in connection with Claim 1.

Claims 2-5, 8-10, 19 and 20

Claims 2-5, 8-10, 19, and 20 depend from, and hence, incorporate all of the limitations of Claim 1 or 18. These claims also recite further limitations that render them patentable over *Burroughs*. Applicant submits that these claims are patentable over *Burroughs* for at least the reasons given above in connection with Claim 1.

103(a) – *Burroughs* in View of Official Notice

Claims 6, 7 and 15-17 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over *Burroughs*, in view of Official Notice. The rejection is respectfully traversed.

Preliminary Matter Regarding the Official Notices

The present Office Action again provides no supporting evidence for the Official Notices previously improperly taken. Citing MPEP 2144.03, page 7 of the Office Action asserts that Applicant has inadequately traversed the Official Notice and that therefore the rejections of Claims 6, 7 and 15-17 are to be taken as admitted prior art..

The Office Action appears to be confused about who legally has the burden of proof. The cited MPEP guideline provides:

> To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. See 37 CFR 1.111(b). See also *Chevenard,* 139 F.2d at 713, 60 USPQ at 241 **("[I]n the absence of any demand by appellant for the examiner to produce authority for his statement, we will not consider this contention.").** A general allegation that the claims define a patentable invention without any reference to the examiner's assertion of official notice would be inadequate. If applicant adequately traverses the examiner's assertion of official notice, the examiner must provide documentary evidence in the next Office action if the rejection is to be maintained. (Emphasis added)

As cited by this MPEP section, the case law is clear as to whom the burden of proof should be carried. That is, once an applicant demands for the examiner to produce authority for his statement, the alleged common knowledge or well-known facts asserted by an examiner will not be established as such, unless the examiner provides documentary evidence in the next office Action.

Here, Applicant has specifically quoted each of the statements containing the improperly taken Official Notices in the previous response and explicitly requested that support be provided as to why the alleged statements are well known in the art or capable of instant and unquestionable demonstration Therefore, Applicant has made demands for the examiner to produce authority for his statement(s). The present Office Action does not provide any documentary evidence to establish the alleged statements as asserted before. Thus, under the case law, the burden of proof remains with the Examiner. Contrary to the assertion in the Office Action, merely citing the MPEP guideline does not equate to providing documentary evidence to support the alleged Official Notices.

Therefore, removal of the rejections as to Claims 6, 7 and 15-17 on the grounds of improperly taken Official Notices is respectfully requested.

Additionally, for ease of reference, Applicant's previously submitted arguments in connection with the Official Notices are reproduced hereinafter.

Claims 6 and 7

The Office Action takes Official Notice as follows:

> [I]t would have been obvious to one of ordinary skill in the art at the time the invention was claimed that a binary large object (i.e., "blob") be returned, wherein a blob is a collection of binary data stored as a single entity in a database management system. Therefore, where it would have been obvious to one of ordinary skill in the art at the time the invention was claimed that an attribute value describe a blob, it would have been obvious to one of ordinary skill in the art that said attribute value(s) be returned accordingly.

However, Claim 6 recites

> The method of claim 1 further comprising determining whether any of the attribute values describes a data field having a plurality of component data fields.

Thus, even if the Official Notice were correct, the Notice still fails to disclose a step of determining whether any of the attribute values describes a data field *having a plurality of component data*, as recited in Claim 6.

Likewise, Claim 7 recites

> The method of claim 6 further comprising obtaining attribute values that describe the plurality of component data fields.

Thus, even if the Official Notice were correct, the Notice still fails to disclose a an obtaining step for the attribute values describes a data field *having a plurality of component data*, as recited in Claim 7.

Applicant respectfully submits that the Official Notice has been improperly taken. According to MPEP, "Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known" (2144.03.A). Applicant respectfully requests that support be provided as to why the alleged fact taken under the Official Notice is well known in the art or capable of instant and unquestionable demonstration.

Furthermore, Claims 6 and 7 depend from, and hence, incorporate all of the limitations of Claim 1. For the reasons set forth above, Applicant respectfully submits that Claims 6 and 7 are patentable over *Burroughs* in view of the Official Notice.

Claim 15

The Official Action also takes Official Notice as follows:

> [I]t would have been obvious to one of ordinary skill in the art at the time the invention was claimed that when a function such as a SQL statement is executed, a collection of aggregate data values is returned.

However, Claim 15 recites

> The method of claim 1 wherein receiving a request to execute a query comprises receiving a request to execute a function that returns a collection of aggregate data values.

Thus, even if the Official Notice were correct, the Notice still fails to disclose receiving a request to execute a function that returns a collection of aggregate data values, as recited in Claim 15.

Applicant respectfully submits that the Official Notice has been improperly taken. According to MPEP, "Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known" (2144.03.A). Applicant respectfully requests that support be provided as to why the alleged fact taken under the Official Notice is well known in the art or capable of instant and unquestionable demonstration.

Furthermore, Claim 15 depends from, and hence, incorporates all of the limitations of Claim 1. For the reasons set forth above, Applicant respectfully submits that Claim 15 is patentable over *Burroughs* in view of the Official Notice.

Claim 16

The Official Action further takes Official Notice as follows:

> [I]t would have been obvious to one of ordinary skill in the art at the time the invention was claimed that queries commonly indicate the type of value (e.g., an integer, text, or string) to be returned by a query.

However, Claim 16 recites

> The method of claim 1 wherein determining that a collection of data elements to be returned by the query corresponds to a first data structure containing data fields not defined within a type dictionary of the database system comprises determining that a predetermined return type is indicated by the query.

Thus, even if the Official Notice were correct, the Notice still fails to disclose determining that a predetermined return type is indicated by the query. In fact, as commonly known, results from a query do not necessarily indicate any type information, for example, where the results are displayed on a monitor in ASCII.

Applicant respectfully submits that the Official Notice has been improperly taken. According to MPEP, "Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known" (2144.03.A). Applicant respectfully requests that support be provided as to why the alleged fact taken under the Official Notice is well known in the art or capable of instant and unquestionable demonstration.

Furthermore, Claim 16 depends from, and hence, incorporates all of the limitations of Claim 1. For the reasons set forth above, Applicant respectfully submits that Claim 16 is patentable over *Burroughs* in view of the Official Notice.

Claim 17

Claim 17 depends from, and hence, incorporates all of the limitations of Claim 1. Claim 17 also recites further limitations that render it patentable over *Burroughs*. Applicant submits that Claim 17 patentable over *Burroughs* in view of the Official Notice for at least the reasons given above in connection with Claim 1.

CONCLUSION

For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Please charge any shortages or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,
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